

5 TITLE: FREEZE PROTECTION DEVICE FOR WALL
HYDRANTS/FAUCETS

BACKGROUND OF THE INVENTION

10 Freezeless wall hydrants and faucets have long been in
existence. They characteristically have a fluid closure
valve located in the end of an inlet pipe located within the
wall or a warmer interior area of the building of which the
wall is a part. This closure valve is operated by an
15 elongated rod connected to an exterior handle. The
freezeless characteristics of the hydrant are caused by the
closure valve shutting off the flow of water within the wall
or building at a freezing temperature, with the residual
water in the inlet pipe flowing by gravity outwardly through
20 the conventional outlet drain of the hydrant.

The foregoing structure works very successfully except
in situations where a hose or the like is attached to the
outlet drain of the hydrant, whereupon the residual water is
not able to easily flow by gravity out of the hydrant when
25 the closure valve connected to the pressurized water is
closed. With a hose attached during freezing weather, the
residual water freezes within the hydrant, and the inlet pipe
or related components thereupon rupture from the freezing
conditions within the hydrant.

30 It has in recent times been recognized that the rupture
of such a hydrant under freezing weather conditions does not
take place because of the frozen water in the hydrant.
Rather, the rupture results from the ice imposing severe
pressure on the captivated non-frozen fluid in the inlet
35 pipe. Thus, the increased pressure on this water by the
expanded ice is the principal cause for the rupture of the
hydrant.

5 Accordingly, it is a principal object of this invention
to provide a freezeless wall hydrant which has the ability to
relieve the pressure on the residual water located inwardly
of frozen residual water located outwardly thereof when that
water freezes by reason of a hose or the like being attached
10 to the discharge nozzle.

These and other objects will be apparent to those
skilled in the art.

SUMMARY OF THE INVENTION

15 A freezeless wall hydrant has a normally horizontal
fluid inlet tube with an interior end and exterior end.
A hollow valve fitting is rigidly secured to the interior end
of the inlet tube for a connection to a source of pressurized
fluid. A valve seat is located on an interior end of the
20 valve fitting.

A casting member is rigidly secured to the outer end of
the inlet tube and includes a drain conduit in communication
with an interior of the inlet tube for discharging water from
the hydrant. A valve body is longitudinally movably mounted
25 in the inlet tube adjacent to the valve fitting. A valve
seating element is on the valve body and is adapted to engage
and disengage the valve seat to prevent or to permit,
respectively, a fluid flow through the valve fitting into the
inlet tube.

30 An elongated operating rod has a rearward end secured
to the valve body and an outer end protruding from the
casting member for longitudinally moving the valve body in
the inlet tube.

A movable ball is located with a fluid conduit that
35 extends from the interior of the inlet tube to the location
of the potable water source. When the water pressure inside
the inlet tube increases because of the presence of ice, the

5 high pressure of such water moves the ball to open fluid flow of the high pressure fluid to the source of potable water which will be at a lower pressure, thus reducing the fluid pressure within the inlet tube and saving it from rupture.

10 BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an elongated sectional view of a wall hydrant embodying the instant invention, and

Fig. 2 is an enlarged scale sectional view taken on line 2-2 of Fig. 1; and

15 Fig. 3 is a sectional view similar to Fig. 2 but shows the valve element in an open condition.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The hydrant 10 in Fig. 1 has an elongated hollow water inlet tube 12 which has an interior end 14 and an exterior end 16. A hollow valve fitting 18 is rearwardly secured to the interior end 14 of tube 12 and has a threaded end 20 adapted to be secured to a conduit connected to a source of pressurized fluid (not shown). The fitting 18 has an interior end 22 with external threads 24 and which terminates in a valve seat 26.

A casting member 28 with hollow interior end 30 is rigidly connected to the exterior end 16 of inlet tube 12. A conventional fluid drain conduit 32 is located within casting member 28 and is in communication with the interior of tube 12. Conventional threads 34 are located on the discharge end of conduit 32 to receive a conventional hose or the like. Casting member 28 also has a threaded aperture 36 which is adapted to receive a conventional bushing 38 which in turn receives packing 40 which is held in tight engagement with bushing 38 by packing washer 42 (Fig. 1).

5 With reference to Fig. 2, a valve sealing element 70
with a seating surface 71 has a plug insert 72 mounted in the
center thereof. An elongated fluid passageway 74 has an open
inner end 76 and an opened outer end 78. The passageway 74
is created between the tolerances between the enlarged head
10 75 on the inner end of rod 50 and the socket 75A in which the
head resides. (The head 75 is interconnected with the rod 50
by means of suitable splines on the head 75 and the socket
75A.) Center bore 80 extends along the center line of valve
sealing element 70 and communicates and is in alignment with
15 center bore 82. At least a pair of fluid exit conduits 84
extend radially outwardly from bore 82 and connect with fluid
channel 86 which is comprised of the small clearance between
plug insert 72 and valve seating element 70. A ball 88 is
normally seated in center bore 80 at the intersection of
20 fluid exit conduits 84 to prevent any fluid flow from bore 80
into the conduits 84 and thence into the thin fluid channel
86 which is in communication with the space 90 which contains
potable water at less than 100 psi. With reference to Figs.
2 and 3, when the water pressure in inlet tube 12 increases
25 by reason of ice forming at the outer end thereof, this
increased fluid pressure will be translated through fluid
passageway 74, center bore 80 in the valve sealing element
70, and thence into the center bore 82 in plug insert 72.
This increased pressure will bear against ball 88 and force
30 it into the position shown in Fig. 3, whereupon fluid flow
can be made through bore 80, bore 82, bores 84, conduit 86,
and thence into the space 90 which contains lower pressure
potable water. This activity reduces the higher pressure of
the fluid in the inner end of inlet tube 12 and prevents the
35 fluid pressure therein from exceeding the rupture pressure of
the inlet conduit.

5 Typically, the removable of a teaspoon of residual water
from the inner end of the inlet tube 12 will be sufficient to
keep the rupturing pressure of the residual water from being
reached.

 It is therefore seen that this invention will achieve at
10 least all of its stated objectives.